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detecting a quantity of light transmitted by the structured mask;

generating a detector signal having a predetermined relationship with the quantity of light; and

evaluating the detector signal in regard to at least one of a presence of the object, a position of the object, a shape of the object, and a temporal change of the position of the object.

23. The process according to claim 22, wherein the object comprises synthetic or biological particles in a microchannel of a fluidic microsystem, wherein the particles are subjected to at least one of hydrodynamic, acoustic, magnetic and electrical forces.

24. The process according to claim 23, wherein the structured mask is positioned in relation to the fluidic microsystem in such a way that light is transmitted by the structured mask from a section in which the particles are to be positioned or moved.

25. The process according to claim 23, wherein the structured mask is positioned in relation to the fluidic microsystem in such a way that light is transmitted by the structured mask from a section into which the particles are not to enter.

26. The process according to claim 22, further comprising at least one of the following additional steps:

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detecting a presence of a resting particle by detecting whether the detector signal has a predetermined, unchanging amplitude;

detecting a presence of a moving particle at a specific position by determining whether the detector signal has a predetermined time characteristic;

detecting frequencies and speeds of particles by evaluating maxima of the detector signal in regard to width and interval of the maxima; and

counting particles by counting the maxima of the detector signal.

27. The process according to claim 26, further comprising at least one of determining a direction of particle movement, and size-dependent counting of particles.

28. The process according to claim 22, further comprising at least one of evaluating an amplitude of the detector signal, and evaluating a variability of the detector signal.

29. The process according to claim 23, wherein the particles are fixed or moved with a trapping laser.

30. The process according to claim 29, wherein the particles are brought into contact with a modification layer, a cell, or receptors in the fluidic microsystem with the trapping laser and, during the evaluation of the detector signal in regard to movement characteristics of the particles, parameters are determined which

are characteristic for interaction of the particles with the modification layer, the cell, or the receptors.

31. A device for object detection, which comprises:

an optical imaging unit for enlarged imaging of at least one resting or moving object on a structured mask, having at least one light transmitting segment adapted to transmit light from a flat section to a detector unit, wherein the object is located at least partially or temporarily in the flat section and the flat section has a characteristic dimension smaller than a dimension of the object or a movement path of the object;

a detector unit for detecting a quantity of light transmitted by the structured mask and for forming a detector signal having a predetermined relationship with the quantity of light; and

an evaluation unit for evaluation of the detector signal in regard to at least one of a presence of the object, a position of the object, a shape of the object and a temporal change of the position.

32. The device according to claim 31, wherein the optical imaging unit is part of a microscope.

33. The device according to claim 32, wherein the structured mask is positioned in a beam path of the microscope.

34. The device according to 31, wherein the structured mask is a transmission screen with at least one transparent segment.

35. The device according to claim 34, wherein multiple segments are provided which are positioned two-dimensionally in a plane of the structured mask.

36. The device according to claim 34, wherein at least one cross-shaped segment, frame-shaped segment, straight-shaped segment and curved strip-shaped segments is provided.

37. The device according to claim 31, wherein the detector unit is adapted for integrated detection of a partial image of the object or a movement path of the object transmitted or reflected by the structured mask.

38. The device according to claim 31, adapted for object detection of synthetic or natural particles in a fluidic microsystem.

39. The device according to claim 38, wherein the particles in the fluidic microsystem are subjected to at least one of hydrodynamic, acoustic, magnetic and electrical forces.

40. The device according to claim 38, wherein a trapping laser arrangement is provided for manipulation of the particles in the fluidic microsystem.

41. The device according to claim 31, wherein the light transmitting segment has a characteristic dimension smaller than

the object or a movement path of the object, or is smaller than an image of the object or a movement path of the image.

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42. The process of claim 22, further comprising at least one of: (a) dielectric single particle spectroscopy in fluidic microsystems; (b) measurement of electromagnetic forces in microelectrode arrangements; (c) measurement of optical forces in trapping lasers; (d) detection of the function of microelectrodes in microsystems; (e) detection of at least one of particle positions, particle movements, particle numbers, and particle interactions; and (f) measurement of particle rotations induced by rotating electrical fields.

43. A process for object detection, with the steps:

optical imaging of at least one resting or moving object on a CCD matrix detector;

electronic masking of a signal of said CCD matrix detector for providing signals from specific image points of said object; and

evaluating said signals from specific image points in regard to at least one of a presence of the object, a position of the object, a shape of the object and a temporal change of the position.

IN THE ABSTRACT

Please enter the attached abstract in the application.